

Kayne Anderson MLP Investment CO
Form N-Q
April 30, 2007

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UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM N-Q

**QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED
MANAGEMENT INVESTMENT COMPANY**

Investment Company Act file number 811-21593

KAYNE ANDERSON MLP INVESTMENT COMPANY

(Exact name of registrant as specified in charter)

1800 Avenue of the Stars, Second Floor, Los Angeles,
California

90067

(Address of principal executive offices)

(Zip code)

David Shladovsky, Esq.

KA Fund Advisors, LLC, 1800 Avenue of the Stars, Second Floor, Los Angeles, California 90067

(Name and address of agent for service)

Registrant's telephone number, including area code: (310) 556-2721

Date of fiscal year end: November 30, 2007

Date of reporting period: February 28, 2007

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SCHEDULE OF INVESTMENTS****FEBRUARY 28, 2007****(amounts in 000 \$)****(UNAUDITED)**

| Description | No. of Shares/Units | Value |
|--|--------------------------------|--------------|
| Long-Term Investments - 163.0% | | |
| Equity Investments(a) - 163.0% | | |
| Pipeline MLP(b) - 134.7% | | |
| Atlas Pipeline Partners, L.P. | 401 | \$ 19,273 |
| Boardwalk Pipeline Partners, LP | 522 | 19,146 |
| Buckeye Partners, L.P. | 157 | 7,702 |
| Copano Energy, L.L.C. | 1,959 | 129,474 |
| Crosstex Energy, L.P. | 2,586 | 97,174 |
| Crosstex Energy, L.P. Senior Subordinated Units, Unregistered (c)(d) | 356 | 11,911 |
| DCP Midstream Partners, LP | 138 | 5,103 |
| Duncan Energy Partners L.P.(d) | 124 | 2,981 |
| Eagle Rock Energy Partners, L.P. | 10 | 195 |
| Enbridge Energy Management, L.L.C.(e) | 399 | 20,363 |
| Enbridge Energy Partners, L.P. | 1,608 | 84,924 |
| Energy Transfer Partners, L.P. | 4,262 | 235,116 |
| Enterprise Products Partners L.P. | 5,359 | 163,511 |
| Global Partners LP | 385 | 11,142 |
| Hiland Partners, LP | 156 | 8,483 |
| Holly Energy Partners, L.P. | 226 | 10,437 |
| Kinder Morgan Management, LLC(e) | 2,907 | 145,377 |
| Magellan Midstream Partners, L.P. | 3,920 | 165,026 |
| MarkWest Energy Partners, L.P. | 908 | 58,915 |
| Martin Midstream Partners L.P. | 202 | 7,328 |
| ONEOK Partners, L.P. | 833 | 53,951 |
| Plains All American Pipeline, L.P. | 2,547 | 141,344 |
| Plains All American Pipeline, L.P.(c) | 565 | 31,062 |
| Regency Energy Partners LP | 663 | 18,244 |
| Regency Energy Partners LP Unregistered(c) | 905 | 23,680 |
| Sunoco Logistics Partners L.P. | 72 | 4,039 |
| Targa Resources Partners LP(d) | 380 | 9,158 |
| TC PipeLines, LP | 228 | 8,269 |
| TC PipeLines, LP Unregistered(c) | 868 | 29,935 |
| TEPPCO Partners, L.P. | 473 | 20,233 |
| TransMontaigne Partners L.P. | 71 | 2,300 |
| Valero L.P. | 481 | 30,296 |
| Williams Partners L.P. | 224 | 9,694 |
| Williams Partners L.P. Class B, Unregistered(c) | 183 | 7,556 |
| Williams Partners L.P. Unregistered(c) | 64 | 2,720 |
| | | 1,596,062 |

Propane MLP - 9.1%

| | | |
|---------------------------|-------|---------|
| Ferrellgas Partners, L.P. | 877 | 20,149 |
| Inergy, L.P. | 2,839 | 88,106 |
| | | 108,255 |

Shipping MLP - 2.0%

| | | |
|------------------------------------|-----|--------|
| K-Sea Transportation Partners L.P. | 140 | 5,518 |
| Teekay LNG Partners L.P. | 355 | 13,064 |
| Teekay Offshore Partners L.P. | 173 | 5,152 |
| | | 23,734 |

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KAYNE ANDERSON MLP INVESTMENT COMPANY
SCHEDULE OF INVESTMENTS (CONTINUED)
FEBRUARY 28, 2007
(amounts in 000 s, except number of option contracts written)
(UNAUDITED)

| Description | No. of Shares/Units | Value |
|---|------------------------|------------------|
| Coal MLP - 6.0% | | |
| Clearwater Natural Resources, LP Unregistered(c)(f) | 3,889 | \$ 58,334 |
| Natural Resource Partners L.P. Subordinated Units | 103 | 6,511 |
| Penn Virginia Resource Partners, L.P. | 230 | 6,227 |
| | | 71,072 |
| Upstream MLP(b) - 1.6% | | |
| Atlas Energy Resources, LLC | 209 | 5,089 |
| BreitBurn Energy Partners L.P. | 97 | 2,677 |
| Constellation Energy Partners LLC | 215 | 6,114 |
| Legacy Reserves LP(d) | 193 | 4,671 |
| | | 18,551 |
| MLP Affiliates - 6.8% | | |
| Atlas Pipeline Holdings, L.P. | 73 | 1,868 |
| Buckeye GP Holdings L.P. | 290 | 5,614 |
| Crosstex Energy, Inc. | 209 | 6,784 |
| Energy Transfer Equity, L.P. | 237 | 7,970 |
| Energy Transfer Equity, L.P. Unregistered(c) | 365 | 12,057 |
| Hiland Holdings GP, LP | 161 | 4,576 |
| Kinder Morgan, Inc. | 187 | 19,724 |
| Magellan Midstream Holdings, L.P. | 259 | 6,325 |
| MarkWest Hydrocarbon, Inc. | 249 | 15,607 |
| | | 80,525 |
| Other MLP - 2.8% | | |
| Calumet Specialty Products Partners, L.P. | 559 | 22,986 |
| Universal Compression Partners, L.P. | 356 | 10,584 |
| | | 33,570 |
| Total Long-Term Investments (Cost \$1,283,574) | | 1,931,769 |
| | Interest | Maturity |

| | Rate | Date | |
|--|--------|-------------------------|--------------|
| Short-Term Investment - 0.1% | | | |
| Repurchase Agreement - 0.1% | | | |
| Bear, Stearns & Co. Inc. (Agreement dated 2/28/07 to be repurchased at \$1,018), collateralized by \$1,049 in U.S. Treasury Bond Strips (Cost \$1,018) | 5.270% | 3/01/07 | 1,018 |
| Total Investments - 163.1% (Cost \$1,284,592) | | | 1,932,787 |
| | | | |
| | | No. of Contracts | |
| Liabilities | | | |
| Option Contracts Written(g) | | | |
| MLP Affiliate | | | |
| Kinder Morgan Inc., call option expiring 3/17/07 @ \$105.00 (Premiums received \$115) | | 1,000 | (125) |
| Auction Rate Senior Notes | | | (320,000) |
| Deferred Taxes | | | (238,513) |
| Revolving Credit Line | | | (107,000) |
| Other Liabilities | | | (20,982) |
| Unrealized Depreciation on Interest Rate Swap Contracts | | | (317) |
| Total Liabilities | | | (686,937) |
| Unrealized Appreciation on Interest Rate Swap Contracts | | | 2,993 |
| Income Tax Receivable | | | 2,448 |
| Other Assets | | | 8,733 |
| Total Liabilities in Excess of Other Assets | | | (672,763) |
| Preferred Stock at Redemption Value | | | (75,000) |
| Net Assets Applicable to Common Stockholders | | | \$ 1,185,024 |

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**KAYNE ANDERSON MLP INVESTMENT COMPANY
SCHEDULE OF INVESTMENTS (CONCLUDED)
FEBRUARY 28, 2007
(amounts in 000 s)
(UNAUDITED)**

- (a) Unless otherwise noted, equity investments are common units/common shares.
- (b) Includes Limited Liability Companies.
- (c) Fair valued securities, restricted from public sale.
- (d) Security is currently not paying cash distributions but is expected to pay cash distributions or convert to securities which pay cash distributions within the next 12 months.
- (e) Distributions are paid in-kind.
- (f) Clearwater Natural Resources, LP is a privately-held MLP that the Company believes is a controlled

affiliate of the Company.

- (g) Security is non-income producing.

From time to time certain of the Company's investments are restricted as to resale. Such restricted investments are valued in accordance with procedures established by the board of directors. The table below shows the number of shares/units held, the acquisition date, purchase price, aggregate cost, fair value as of February 28, 2007, value per share/unit of such security, percent of net assets applicable to common stockholders and percent of total assets which the security comprises:

| Investment | Security | Number of Units | Acquisition Date | Purchase Price | Cost | Fair Value | Value Per Unit | Percent of Net Assets (1) | Percent of Total Assets |
|------------------------------------|-------------------------------|-----------------|------------------|----------------|-----------|------------|----------------|---------------------------|-------------------------|
| Clearwater Natural Resources, L.P. | Common Units (2) | 3,889 | (3) | \$ 77,855 | \$ 72,978 | \$ 58,334 | \$ 15.00 | 4.9% | 3.0% |
| Crosstex Energy, L.P. | Senior Subordinated Units (2) | 356 | 6/29/06 | 10,022 | 10,022 | 11,911 | 33.42 | 1.0 | 0.6 |
| | | 365 | 11/27/06 | 10,007 | 9,895 | 12,057 | 33.05 | 1.0 | 0.6 |

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| | | | | | | | | | |
|---|-------------------|-----|----------|------------|------------|------------|-------|-------|------|
| Energy Transfer Equity, L.P. Plains All America Pipeline, L.P. Regency Energy Partners LP | Common Units (2) | 565 | 12/19/06 | 27,500 | 27,093 | 31,062 | 54.97 | 2.6 | 1.6 |
| TC PipeLines, LP | Common Units (2) | 868 | 2/22/07 | 30,000 | 30,000 | 29,935 | 34.50 | 2.5 | 1.5 |
| Williams Partners L.P. | Class B Units (2) | 64 | 12/13/06 | 2,324 | 2,297 | 2,720 | 42.83 | 0.3 | 0.2 |
| Williams Partners L.P. | Units (2) | 183 | 12/13/06 | 6,564 | 6,487 | 7,556 | 41.22 | 0.7 | 0.4 |
| | | | | \$ 183,284 | \$ 177,784 | \$ 177,255 | | 15.0% | 9.1% |

(1) Applicable to common stockholders.

(2) Unregistered security.

(3) The Company purchased common units on 8/1/05 and 10/2/06.

At February 28, 2007, the cost basis of investments for Federal income tax purposes was \$1,236,124. At February 28, 2007, gross unrealized appreciation and depreciation of investments for Federal income tax purposes were as follows:

| | |
|-------------------------------|------------|
| Gross unrealized appreciation | \$ 708,637 |
| Gross unrealized depreciation | (11,975) |
| Net unrealized appreciation | \$ 696,662 |

The identified cost basis for federal tax purposes is estimated based on information available from the Company's portfolio companies. In some cases, this information is very limited. Accordingly, the actual cost basis may prove higher or lower than the estimated cost basis included in this footnote.

Securities valuation policies and other investment related disclosures are hereby incorporated by reference to the Company's annual report previously filed with the Securities and Exchange Commission on Form N-CSR on February 7, 2007, with a file number 811-21593.

Other information regarding the Company is available in the Company's most recent annual report. This information is also available on the Company's website at <http://www.kaynemlp.com>; or on the website of the Securities and Exchange Commission, <http://www.sec.gov>.

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Item 2: Controls and Procedures

(a) As of a date within 90 days from the filing date of this report, the principal executive officer and principal financial officer concluded that the registrant's disclosure controls and procedures (as defined in Rule 30a-3(c) under the Investment Company Act of 1940 (the Act)), were effective based on their evaluation of the disclosure controls and procedures required by Rule 30a-3(b) under the Act and Rules 13a-15(b) or 15d-15(b) under the Securities and Exchange Act of 1934.

(b) There were no changes in the registrant's internal control over financial reporting (as defined in Rule 30a-3(d) under the Act) that occurred during the registrant's last fiscal quarter that have materially affected, or are reasonably likely to materially affect, the registrant's internal control over financial reporting.

Item 3: Exhibits

1. The certifications of the registrant as required by Rule 30a-2(a) under the Act are exhibits to this report.

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

KAYNE ANDERSON MLP
INVESTMENT COMPANY

/s/ Kevin S. McCarthy

Name: Kevin S. McCarthy
Title: Chairman, President and Chief
Executive Officer
Date: April 27, 2007

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ Kevin S. McCarthy

Name: Kevin S. McCarthy
Title: Chairman, President and Chief
Executive Officer
Date: April 27, 2007

/s/ Terry A. Hart

Name: Terry A. Hart
Title: Chief Financial Officer and
Treasurer
Date: April 27, 2007